



RESEARCH BRIEF
March 2007

Tennessee's Most Effective Teachers

Are they assigned to the schools that need them the most?

On December 14, 2006, the U.S. Department of Education approved Tennessee's Teacher Equity Plan. The plan included a comprehensive analysis of teacher experience and education levels across schools that serve high versus low proportions of students in poverty and in schools that serve high versus low proportions of minority students. In keeping with findings from similar analyses in other states, Tennessee identified pervasive disparities in teacher experience and education levels across schools:

- High-poverty schools and high-minority schools have a larger percentage of beginning teachers than low-poverty schools and low-minority schools, and
- High-poverty schools and high-minority schools have a smaller percentage of teachers with master's degrees than low-poverty schools and low-minority schools.

In the plan, Tennessee committed to taking this analysis one crucial step further to examine the disparity in teacher effectiveness across schools based on student poverty and race/ethnicity.

It is important to measure teacher effectiveness because teacher experience and education do not always predict impact in the

classroom. Some beginning teachers with bachelor's degrees, for example, may be as or more effective at improving student achievement than experienced teachers with master's degrees.

It is also essential to study the distribution of teacher effectiveness across schools. In Tennessee, students in poverty and minority students are less likely to be meeting grade-level standards than other students. While they make about the same rate of academic progress each year as other students, they are more likely to start out below grade level. They need effective teachers – teachers who have the ability to accelerate their rate of academic progress – to reach grade level expectations and beyond.

Tennessee is uniquely positioned to carry out this analysis. For more than 14 years, the state has been harnessing its longitudinal student assessment database – which includes links between students and their teachers – to measure teacher effectiveness. Its "value-added" statistical model, developed by Dr. William L. Sanders, isolates the impact each teacher has on individual students' academic growth. This impact is captured in a "teacher effect" score.

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Teacher effect scores are reported in normal curve equivalent (NCE) scores relative to the average growth of students statewide in a given grade and subject. A teacher effect score below zero indicates that the average student in the teacher's class made less growth than the statewide average, while a teacher effect score above zero indicates that the average student in the teacher's class made more growth than the statewide average. All teacher effect scores include a standard error, which is a measure of the uncertainty around the score.

This report uses statewide teacher effect scores in math for 2005-06. For purposes of this analysis, teachers were divided into one of three categories based on their teacher effect scores: "least effective", "most effective", or between:

- If a teacher's effect score was below zero, and one standard error above the score was still negative, the teacher was categorized as "least effective."
- If a teacher's effect score was positive, and one standard error below the score was still positive, the teacher was categorized as "most effective".
- All other teachers were classified as between.

The report compares the distribution of teachers in the "least effective" and "most effective" categories.

It first compares teacher effectiveness in schools that serve high proportions of students in poverty and minority students (high poverty/high minority)

versus teacher effectiveness in schools that serve low proportions of students in poverty and minority students (low poverty/low minority).¹ It makes two separate comparisons across the two types of schools:

- The percent of the schools' teaching staff that falls in the "least effective" category and the percent that falls in the "most effective" category, and
- The average effectiveness of the teachers who fall in the "least effective" category and of the teachers who fall in the "most effective" category.

It then makes the same comparison, but differentiates by the teacher's experience level. This indicates how the correlation between teacher experience and effectiveness differs between the two types of schools.

The report has serious implications for education policies designed to match effective teachers with the students who need them the most. It finds a clear equity problem. Low-income and minority children have the least access to the state's most effective teachers and more access to the state's least effective teachers. Although many of the beginning teachers in high poverty/high minority schools are among the state's most effective, many of them do not stay in these schools or lose their effectiveness over time.

These patterns must be eliminated or reversed to achieve national, state, and local education goals for all students to reach challenging grade-level standards.

¹ High poverty/high minority schools have at least 75% students who qualify for free or reduced price lunch and at least 75% students who are African-American, American Indian/Alaska Native, Asian/Pacific Islander, or Hispanic/Latino. Low poverty/low minority schools have less than 25% students who qualify for free or reduced price lunch and less than 25% students who are African-American, American Indian/Alaska Native, Asian/Pacific Islander, or Hispanic/Latino.

Teacher Effectiveness Comparison by School Type

Tennessee's teacher effectiveness data indicate that students in high poverty/high minority schools have less access to the "most effective" teachers and more access to the "least effective" teachers than students in low poverty/low minority schools.

In high poverty/high minority schools, teachers who fall into the "most effective" category make up 17.6 percent of the teaching staff. In low

poverty/low minority schools, meanwhile, these teachers comprise 21.3 percent of the teaching staff (Figure 1).

In high poverty/high minority schools, teachers who fall into the "least effective" category make up 23.8 percent of the teaching staff. In low poverty/low minority schools, these teachers comprise 16 percent of the teaching staff (Figure 2).

Figure 1: Distribution of the "Most Effective" Teachers

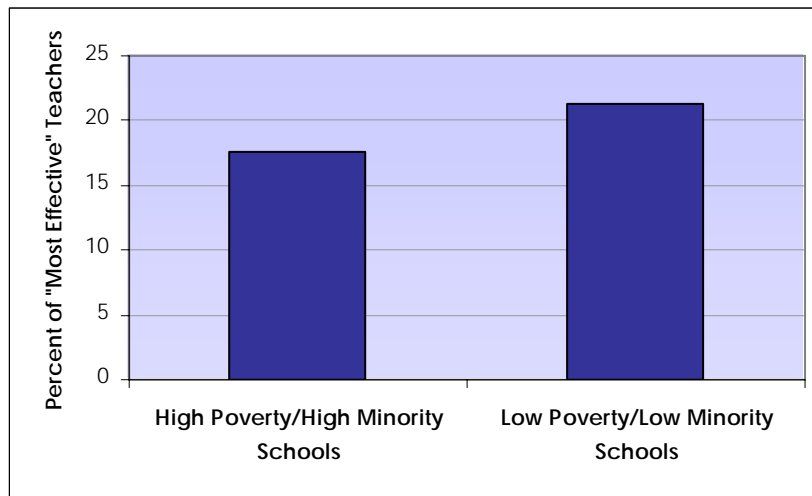
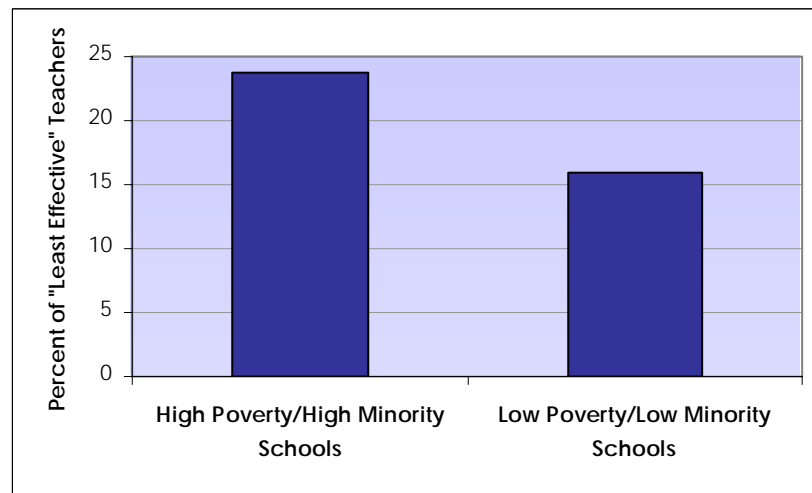


Figure 2: Distribution of the "Least Effective" Teachers



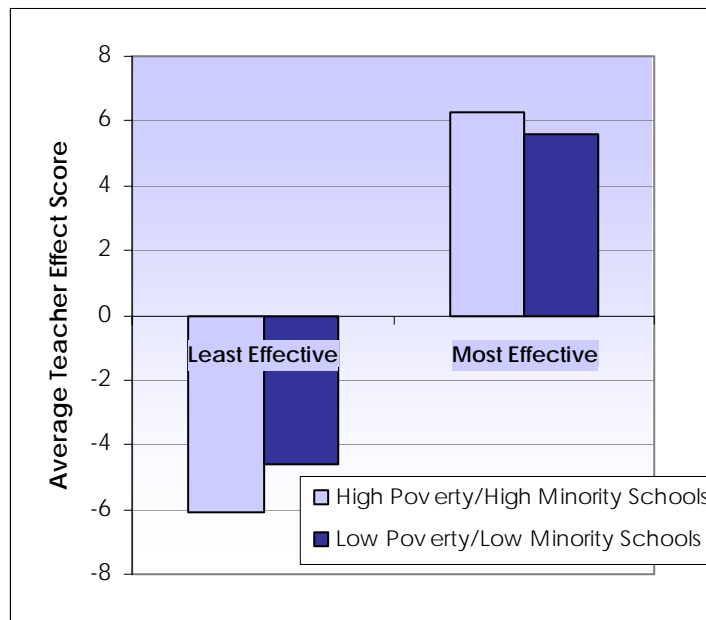
Tennessee's data also show that the average effectiveness of teachers within the categories differs by the type of school (Figure 3). The "least effective" teachers in high poverty/high minority schools are even less effective than the "least effective" teachers in low poverty/low minority schools.

Meanwhile, the "most effective" teachers in high poverty/high minority

schools are even more effective than the "most effective" teachers in low poverty/low minority schools.

These results confirm the importance of teacher effectiveness in high poverty/high minority schools, and further underscore the need for their students to have equal access to effective teachers.

Figure 3: Average Effectiveness of Teachers



Teacher Effectiveness Comparison by School Type and Experience Level

The above data clearly identify an inequity in student access to effective teachers, but to develop policies that could eliminate the inequity, policymakers and educators need to know more about how these types of schools differ in their ability to retain and attract effective teachers throughout their careers.

The analyses in Tennessee's Teacher Equity Plan and in numerous other studies show that high poverty and high minority schools have a disproportionate number of beginning teachers. The current data analysis confirms this relationship (Table 1),

indicating that high poverty/high minority schools have larger percentages of teachers with few years of experience and smaller percentages of teachers with many years of experience.

Table 1: Teacher Years of Experience

Teacher Years of Experience	High Poverty/ High Minority Schools	Low Poverty/ Low Minority Schools
0-2	17.3	13.9
3-5	20.0	13.5
6-10	25.0	22.1
11-20	18.3	24.2
21+	19.4	26.3

Figure 4: Distribution of the “Most Effective” Teachers by Experience

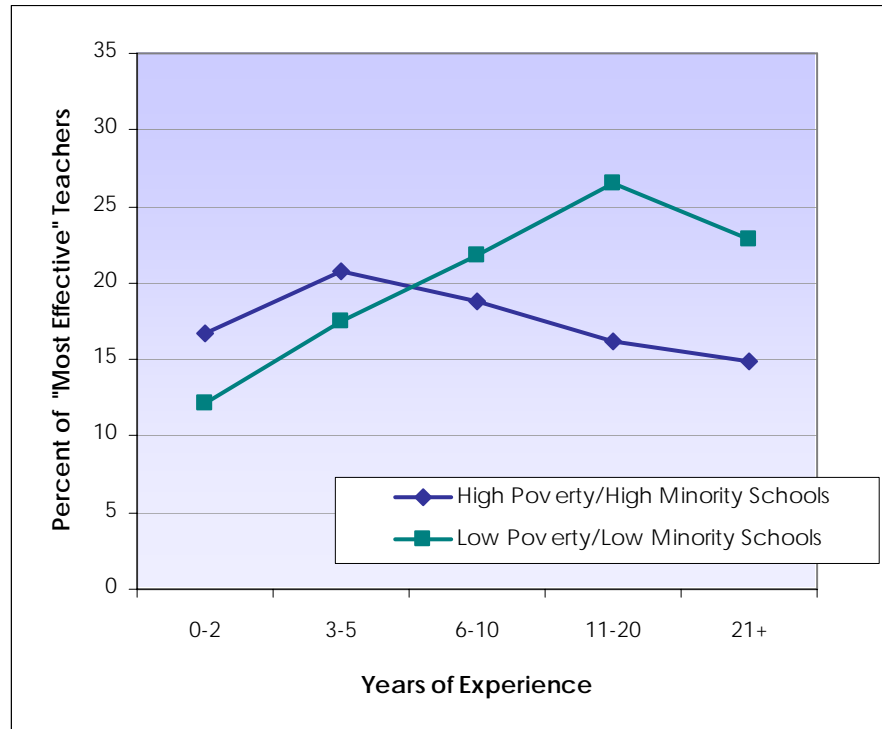


Figure 4 compares the percentage of “most effective” teachers by experience level in high poverty/high minority schools to the percentage of “most effective” teachers by experience level in low poverty/low minority schools.

It finds that among teachers with up to 5 years of experience:

- High poverty/high minority schools have a larger percentage of “most effective” teachers than low poverty/low minority schools.
- For both types of schools, teachers with 3-5 years of experience are more likely to fall into the “most effective” category than teachers with up to 2 years of experience.

Among teachers with 6 or more years of experience:

- High poverty/high minority schools have a smaller percentage of “most effective” teachers than low poverty/low minority schools.
- In low poverty/low minority schools, teachers are more likely to fall into the “most effective” category as they gain more experience (up to 20 years). In high poverty/high minority schools, however, teachers are less likely to fall into the “most effective” category as they gain more experience.

Figure 5: Distribution of the “Least Effective” Teachers by Experience

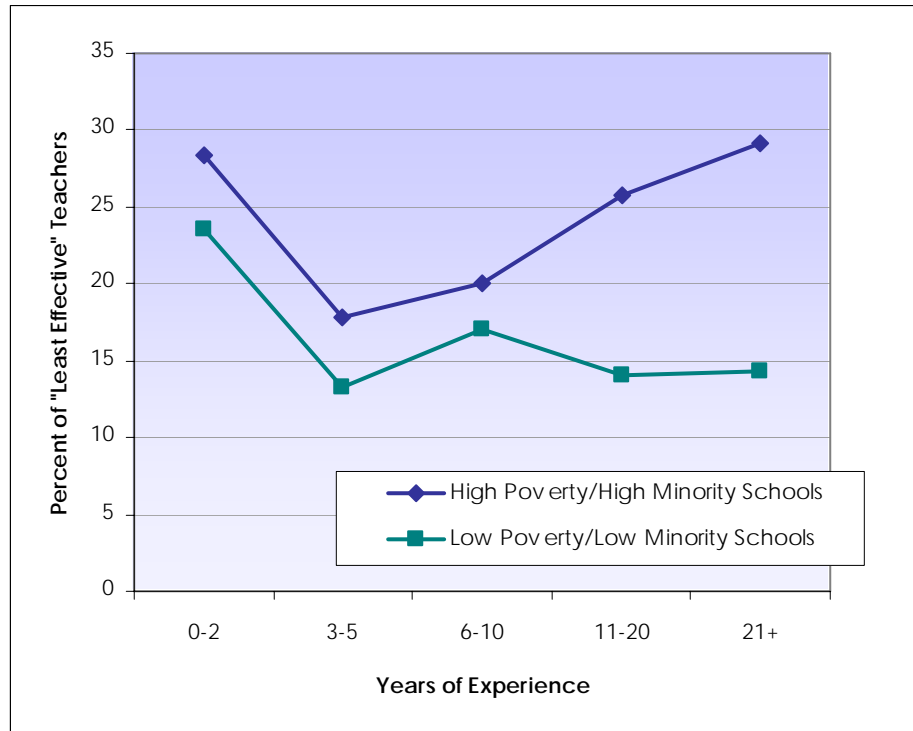


Figure 5 compares the percentage of “least effective” teachers by experience level in high poverty/high minority schools to the percentage of “least effective” teachers by experience level in low poverty/low minority schools.

It shows that across all levels of experience:

- High poverty/high minority schools have a larger percentage of “least effective” teachers than low poverty/low minority schools.

Among teachers with up to 5 years of experience:

- In both types of schools, teachers with 3-5 years of experience are much less likely to fall into the “least effective” category than teachers with up to 2 years of experience.

Among teachers with 6 or more years of experience:

- In high poverty/high minority schools, teachers are more likely to fall into the “least effective” category as they gain more experience.

Conclusion

These comparisons find that students in Tennessee's high poverty/high minority schools have less access to the state's most effective teachers and more access to the state's least effective teachers. They suggest that while many of the beginning teachers in high poverty/high minority schools are among the state's most effective, many of them do not stay in these schools or lose their effectiveness over time.

The analyses also validate that Tennessee's efforts to ensure an

equitable distribution of teachers to low-income children and minority children must be focused on teacher effectiveness as well as teacher qualifications such as experience and education. Tennessee has a treasure of data to support these efforts. Through continuous evaluation at the state, district, school, and classroom levels, these data can guide policymakers and educators alike in improving instruction and matching teachers to the students who need them the most.